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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,067	12/28/2001	John Durbin Husher	2208P	9458

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EXAMINER

WILSON, CHRISTIAN D

ART UNIT PAPER NUMBER

2824

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/034,067

Applicant(s)

HUSHER, JOHN DURBIN

Examiner

Christian Wilson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 9-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☒ Other: search history.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1 – 8, drawn to a method of making a semiconductor device, classified in class 438, subclass 629.
 - II. Claims 9 – 22, drawn to a semiconductor device, classified in class 257, subclass 773.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the device of group II can be made by a materially different process such as not depositing an epitaxial layer.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Joseph Sawyer on March 26, 2003 a provisional election was made without traverse to prosecute the invention of group II, claims 9 – 22. Affirmation of this election must be made by applicant in replying to this Office action. Claims

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1 – 8 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 9 – 12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ellul *et al.* in view of Thomas *et al.*

Regarding claim 9, Ellul *et al.* (US 5,614,750) teaches a semiconductor device [Figure 6] comprising a substrate 52, a plurality of device structures 90, a buried layer 54, an interconnect comprising a slot 78, a conductive material 82 in the slot, oxidized sidewalls 80 which forms a sinker to the buried layer [column 4, lines 63-67]. Thomas *et al.* (US 4,933,743) teaches a metal 26 in a slot to form an interconnect. It would have been obvious to one of ordinary skill in the art to use a metal in the device of Ellul *et al.* since Ellul *et al.* teaches the use of other conductive materials such as those taught by Thomas *et al.*

Regarding claims 10 – 12, Thomas *et al.* further teaches multiple metals in the interconnect slot which partially fill the slot with a final metal which provides the interconnect layer. It would have been obvious to one of ordinary skill in the art to use the multiple metals of Thomas *et al.* in the device Ellul *et al.* since the structure of Thomas *et al.* provides lower resistance and improved electromigration resistance [column 2, lines 63-67].

Regarding claim 17, Ellul *et al.* further teaches a sinker coupled to a collector 55.

7. Claims 13 – 16 and 18 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ellul *et al.* in view of Thomas *et al.*

Regarding claim 13, Ellul *et al.* teaches a semiconductor device [Figure 6] comprising a buried layer 54, an interconnect comprising a slot 78, a conductive material 82 in the slot, oxidized sidewalls 80 which forms a sinker to the buried layer [column 4, lines 63-67]. Thomas *et al.* teaches a metal 26 in a slot to form an interconnect. It would have been obvious to one of ordinary skill in the art to use a metal in the device of Ellul *et al.* since Ellul *et al.* teaches the use of other conductive materials such as those taught by Thomas *et al.*

Regarding claims 14 – 16, 20, and 22, Thomas *et al.* further teaches multiple metals in the interconnect slot which partially fill the slot with a final metal which provides the interconnect layer where the high current carrying conductors are on the same level [Figure 1L]. It would have been obvious to one of ordinary skill in the art to use the multiple metals of Thomas *et al.* in the device Ellul *et al.* since the structure of Thomas *et al.* provides lower resistance and improved electromigration resistance [column 2, lines 63-67].

Regarding claim 18, Ellul *et al.* further teaches a slot coupled to the emitter 94.

Regarding claims 19 and 21, Ellul *et al.* further teaches a CMOS integrated circuit structure with a bipolar device. Thomas *et al.* teaches an integrated circuit with bipolar and MOS logic circuits on the same device [column 1, lines 12-25]. It would have been obvious to one of ordinary skill in the art to use the device of Ellul *et al.* in an IC comprising bipolar transistors and MOS transistors since these are well known in the art as devices integrated on the same circuit using high voltage interconnects.

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Conclusion

8. A copy of the EAST text search history is included in this office action.
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian Wilson whose telephone number is (703) 308-6265. The examiner can normally be reached on weekdays, 7:30 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (703) 308-2816. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0658.

Christian Wilson, Ph.D.
Examiner
Art Unit 2824

CDW
April 3, 2003



Vu A. Le
Primary Examiner